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ABSTRACTS
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(Pages refer to the Japanese originals of this volume unless otherwise noticed)

Spectroscopical Studies of the Fluorescence in Sake.

(pp. 1207~1209)

By Tetutaro TADOKORO, Naomoto TAKASUGI and Keizo ITŌ.

(Hokkaido Imperial University, Received July 26, 1938.)

On the Ascorbic Acid Formation from Mannose in Plants and Animal Bodies II.

(pp. 1210~1212)

By Tetutaro TADOKORO and Keizo ITŌ.

(Hokkaido Imperial Universiy, Received July 26, 1938.)

Alcohol Manufacture from Potato. (Part XII.)
On the Manufacture of Absolute-Alcohol on Semi-Industrial Scale. (II.)

(pp. 1213~1227)

By H. OKADA.

(The Hokkaido Industrial Experiment Station, Received July 13, 1938.)

Studies on Vitamin C. (I)

On the Vitamin C Content in various Flowers and Leaves.

(pp. 1228～1236)

By Hisateru MITUDA.

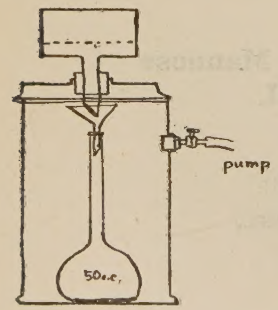
(Laboratory of Nutritional Chemistry, Kyoto Imp. University. Received July 26, 1938.)

Numerous studies on the vitamin C in fruits and vegetables have been made, but most of them have been concerned only with the use of these materials as foodstuffs. A plant produces and consumes vitamin in parts of itself. The vitamin in plant bodies has physiological significances for life–phenomena of the plant itself. These significances may be elucidated. With such a purpose I have entered on this study.

First, I have adopted the titrimetric determination of ascorbic acid with 2: 6-dichlorphenolindophenol, which is generally used. In this case I have improved some points of the method, which are explained in the following liner.

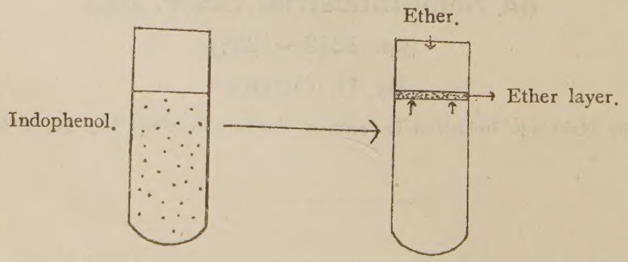
Formerly when it was difficult to obtain the juice by pressing the sample, I extracted it with acetic acid and separated the solution by centrifuging, but now, instead of centrifuging, I have used the apparatus such as is shown in the illustration, to filter it with the aid of suction.

Secondly, I have studied the elimination of the colouring matters of the sample, which is said to be the most difficult in the determination of vitamin C, and as a consequence, I have discovered that by mixing fuller's earth into the sample, not only the colouring matters of flowers but also those of fruits and urine can be eliminated easily and completely, and moreover, the vitamin C in them is neither destroyed nor absorbed by the fuller's earth.



Thirdly, I have discovered that 2: 6-dichlorphenolindophenol is more soluble in ether than in water. Until now, many experimenters have often been troubled in pointing out exactly the limit of the discolouration in the titrimetric determination of the ascorbic acid with 2: 6-dichlorphenolindophenol.

But now, by adding a few drops of ether in the test–tube, the indophenol which remained coloured, penetrates into the layer of ether immediately. We know, therefore, by this means, whether the titration is complete or not.



The summary is as follows.

1). The vitamin C content in flowers and leaves is in great quantities and exceeds that in citrus fruits which have much more vitamin C than any other fruit.
2). Of the flowers, the vitamin C content in the petal is richer than in the stamen, the pistil, or in the calyx, and generally speaking, the red or the violet flower has a tendency to contain more dehydroascorbic acid than the white or the yellow ones.
3). Of the leaves, I have found, examining the leaves of the wistaria, that the young leaves contain much more vitamin C than the old ones, and this may be cited as an instance that vitamin C has the action of accelerating the growth of plants.
4). From olden times, it has been widely known that green tea contains a very great quantity of vitamin C, and I have found that "sencha" or "bancha" contains more vitamin C than "gyokuro" or black tea, after examining the vitamin C content in various kinds of tea. Therefore, I believe that this fact proves the relation between the sunlight and the vitamin C content in the tea-leaves.
5). The amaranth (Amarantus tricolor, L.) contains a great quantity of vitamin C. I have found an interesting consistent relation between its discolouration and the vitamin C content, that is to say, the fact that there is a counter-balanced relation between the decreasing of the quantity of the chlorophyll and that of vitamin C.

I think, this may sufficiently give a hint of how significant it is for the plant itself that it produces and consumes vitamin C.

In conclusion the writer must express his sincere thanks to Prof. Dr. K. Kondo for his sympathetic guidance and encouragement throughout the whole of the writer's studies, and to Prof. Dr. H. Kihara for kindly supplying the sample.

(July 1, 1938)

On the Relation between the Nitrogen Compounds of various Seeds of Crops and the Diastatic Power of their Malts.

Part I. Studies on Kaoliang.

(pp. 1237～1242)

By Hideo KATAGIRI and Narataro MUGIBAYASI.

(Agr. Chemical Laboratory, Kyoto Imperial University; Received July 26, 1938.)

The forms of nitrogen, saccharifying and liquefying powers of both germinated (28～29 hours at 25°) and ungerminated seeds of various kinds of kaoliang were investigated.

Hordein nitrogen, the principal constituent of nitrogen compounds, was remarkably decreased, while total soluble nitrogen extracted by 5% K_2SO_4 was greatly increased during the germination, and the diastatic power of germinated seeds reached about 2∼4 times that of the ungerminated seeds according to the kinds of kaoliang and to the saccharifying or liquefying power of amylase.

It was concluded that the diastatic power of the germinated seeds could be estimated from the amount of albumin of the ungerminated seeds which was coagulated from the extract of 5% K_2SO_4 solution by heating at 82° in pH=4.6, since a parallel relation would exist between the diastatic power and the amount of albumin mentioned above.

And this relation would not be affected by the tannin in the seeds, since the diastatic power of germinated seeds was always increased in the same degree (about 10%) regardless of the kinds of kaoliang, which were found to contain very different amounts of tannin, when tannin was thoroughly extracted from the germinated seeds by acetone.

On the Relation between the Nitrogen Compounds of various Seeds of Crops and the Diastatic Power of their Malts.

Part II. Studies on Beans, especially on Mung Beans.

(pp. 1243∼1247)

By Hideo KATAGIRI and Narataro MUGIBAYASI.

(Agr. Chemical Laboratory, Kyoto Imperial University; Received July 26, 1938.)

The maltase, saccharifying and liquefying power of both germinated and ungerminated seeds of various kinds of beans including peas, Azuki-, mung-, mature and immature (green) soy-beans were investigated.

The occurrence of maltase and liquefying enzyme in the ungerminated seeds were never detected. The production of these enzymes by germination was observed to be quite different from different kinds of seeds; in germinated seeds of mung- and Azuki-beans maltase was definitely detected while the occurrence of maltase was not observed in the seeds of mature soybeans. The germinated seeds of mung beans revealed a very powerful liquefaction of starch, while inferior liquefying power was always found with all the other seeds.

During the germination, globulin nitrogen of all the seeds was decreased and non-protein nitrogen was always increased, however, the amount of synthesis or decomposition of the other forms of nitrogen was not the same in all the kinds of seeds.

As regards the distribution of nitrogen in various kinds of ungerminated seeds

of mung beans, it was concluded that the higher the amount of the total nitrogen of the seeds the higher percentages of total salt soluble-, albumin-, non-protein- and proteose-peptone nitrogen and lower percentages of globulin-, glutelin- and hordein nitrogen were observed.

It was suggested that the saccharifying power of the germinated seeds of mung beans could be estimated from the amount of total nitrogen or more exactly from the amount of albumin nitrogen of the ungerminated seeds, as was already found with the seeds of kaoliang (see This Journal **14**, 1237 (1938)).

On the Nutritive Deficiency of Kaoliang Protein.

(pp. 1248～1256)

By Shiro Maeda, Tuneto Higasi and Hitoshi Matsuoka.

(The Institute of Phisical and Chemical Rsearch, Received July, 5, 1938.)

On Fatty Oils of Smoked Fishes. (II)

Feeding experiment with smoked herring oils.

(pp. 1271～1276)

By E. Takahashi and Y. Masuda.

(Agricultural Chemical Laboratory, Hokkaido Imp. University, Received Aug. 11, 1938.)

It has been previously shown that oils prepared from smoked herrings indicated the antioxygenic properties and these characteristics were well maintained even at higher temperature.

To find how such oils exert an influence on growing animals we have further carried out a nutrition experiment comparing old and new herring oils.

In the feeding experiment on albino rats with the diet containing 3 per cent of yeast, the groups fed with the addition of 5 per cent rancid oil in the diet could not live long while those fed with fresh oil could achieve normal growth even when the oil amounted to 20 per cent. The groups fed with smoked herring oil also showed good growth without any bad influence even by 20 per cent oil feeding, at a degree nearly equal to those having 20 per cent of butter fat.

On the diet containing no yeast, the growth of rats was not appreciably impaired by the addition of 10 per cent of fresh oil, and even by the amount of 20 per cent was less harmed than by 5 per cent addition of rancid oil. Smoked herring oil even to the amount of 20 per cent, gave good results and was digested more easily.

Studies on the Cell-Wall Constituents of Soy-Bean. (I)

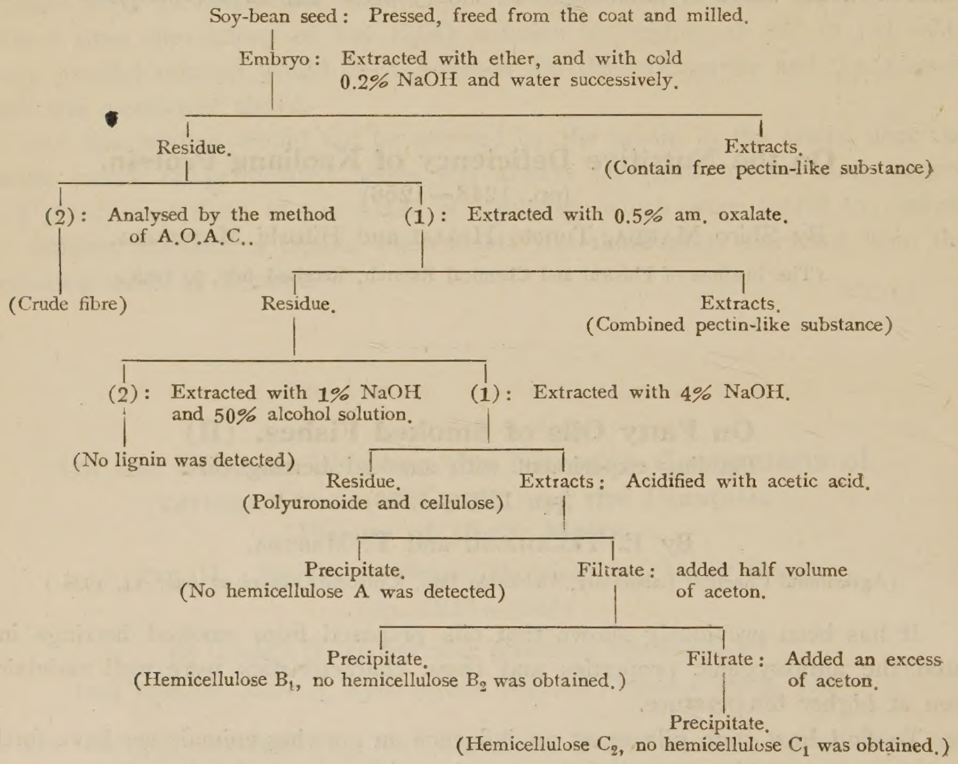
Cell-Wall Constituents of the Embryo of the Seed

(pp. 1257~1263)

By Shiuiku SASAKI and Yoshimasa YAMASHITA.

(Agr. Chem. Laboratory, Kyushiu Imperial University, Received July 16, 1938.)

The following scheme was employed for the isolation of the cell-wall constituents of the embryo.


Soy-bean seed : Pressed, freed from the coat and milled.
Embryo : Extracted with ether, and with cold 0.2% NaOH and water successively.
Residue.
Extracts.
(Contain free pectin-like substance)
(2) : Analysed by the method of A.O.A.C..
(1) : Extracted with 0.5% am. oxalate.
(Crude fibre)
Residue.
Extracts.
(Combined pectin-like substance)
(2) : Extracted with 1% NaOH and 50% alcohol solution.
(1) : Extracted with 4% NaOH.
(No lignin was detected)
Residue.
(Polyuronoide and cellulose)
Extracts : Acidified with acetic acid.
Precipitate.
(No hemicellulose A was detected)
Filtrate : added half volume of aceton.
Precipitate.
(Hemicellulose B₁, no hemicellulose B₂ was obtained.)
Filtrate : Added an excess of aceton.
Precipitate.
(Hemicellulose C₂, no hemicellulose C₁ was obtained.)

The average yield in each fraction.

	Percentage of the embryo
Free pectin-like substance.	less than 2.0
Residue insoluble in 0.2% NaOH.	17.0
Combined pectin-like substance.	9.0
Hemicellulose B_1.	2.0~3.1
Hemicellulose C_2.	0.5~1.0
*Residue insoluble in 4% NaOH (Polyuronide, cellulose etc.).	4.6~5.4
Crude fibre.	3.38

* Residue in soluble in 4% NaOH contains crude fibre.

Biochemical Investigation of Mosaic Disease of Tobacco Plants. III.

On Catalase in the Leaves of Healthy and Mosaic Plants.

(pp. 1264∼1270)

By Y. OKUDA and K. KATAI.

(Department of Agriculture of Kyusyu Imperial University, Fukuoka; Received Aug. 24, 1938.)

Statistic Studies of Soils. (I)

(pp. 1277∼1284)

By Dr. MISU–Hideo.

(Agricultural Experiment Station, Government General of Tyosen, Received June 24, 1938.)

Berichtigung zur Arbeit: Ueber die technische Citronensäuregärung. I.

Mitt. von Nakazawa, Takeda und Nakano.
(Diese Zeitschrift 1937, **13**, 52∼62)
(s. 1285)

Von M. NAKANO.

(The Departrnent of Jndustry, Gevernment Resevch Institute,
Taiwan, Japan, Received Sept 20,1938.)

Researches on the Electrolytic Reduction Potentials of Organic Compounds.-Part 26.

On the standard electrolytic reduction potential–pH curve.

(pp. 1286∼1296)

By Isamu TACHI.

(Agricultural Chemical Institute, Kyoto Imperial University. Received Aug. 11, 1938.)

The relation of the standard electrolytic reduction potential, π_0', to pH of the electrolytic solution was theoretically discussed under consideration of the dissociation constants of a reducible compound as well as of its reduced form.

As an example of redox systems, neutral red was taken. The inclinations of the π_0'—pH curve of neutral red were in fair agreement with theoretical values. Then the dissociation constants of neutral red and leuco neutral red were calculated from the inflection points of the π_0'—pH curve.

Diss. const. of neutral red : $k_b=3.2\times10^{-7}$ at 25°C
Diss. const. of leuco form : $k_b=1.3\times10^{-9}$ at 25°C
Diss. const. of leuco form : $k_a=3.2\times10^{-9}$ at 25°C

It was suggested theoretically that the leuco form of neutral red was an amphotelyte.

As an example of irreversible reduction systems, benzoylacetone was taken. The inclinations of the π_0'—pH curve of benzoylacetone did not agree so well with the theory as the case of neutral red, but the shape of the curve was approximately near to the theoretical form. Therefore, we were able to describe the inflection points of the π_0'—pH curve to show the dissociation constants of benzoylacetone. Then the values were calculated.

Diss. const. of benzoylacetone : $k_a=3.2\times10^{-7}$ at 25°C
The first dissociation constant of the reduced form of benzoylacetone :
$k_a=4.0\times10^{-4}$ at 25°C
The second dissociation constant of the reduced form of benzoylacetone :
$k_a=1.0\times10^{-11}$ at 25°C.

Studies on the Yeasts found in "Miso".

(pp. 1297~1324)

(The Brewing Laboratory of Noda Shôyû Co. Ltd., Noda-Machi, Chiba-Ken, Japan. Received Apr. 27, 1938.)